



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
08.03.2017 Bulletin 2017/10

(43) Date of publication A2:
30.01.2013 Bulletin 2013/05

(21) Application number: **12177791.6**

(22) Date of filing: **25.07.2012**

(51) Int Cl.:
F01C 1/22 (2006.01) **F01C 20/24** (2006.01)
F01C 20/10 (2006.01) **F01C 21/18** (2006.01)
F01C 20/06 (2006.01) **F04C 29/00** (2006.01)
F01C 21/10 (2006.01) **F01C 21/08** (2006.01)
F01C 21/06 (2006.01) **F01C 11/00** (2006.01)

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(30) Priority: **28.07.2011 US 201161512563 P**
14.10.2011 US 201113273488

(71) Applicant: **PRATT & WHITNEY CANADA CORP.**
Longueuil, Quebec J4G 1A1 (CA)

(72) Inventors:
• **Thomassin, Jean**
Ste-Julle, Québec J3E 2K2 (CA)

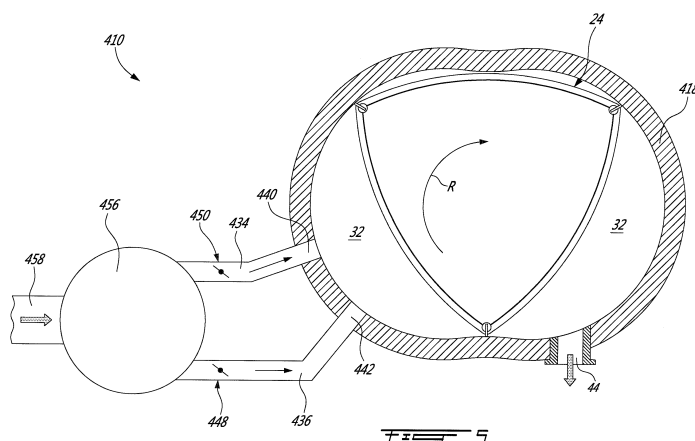
• **Julien, Andre**
Ste-Julle, Québec J3E 3P1 (CA)
• **Schulz, Edwin**
Greenfield Park, Québec J4V 2V8 (CA)
• **Lanktree, Michael**
La Prairie, Québec J5R 4Y9 (CA)

(74) Representative: **Leckey, David Herbert**
Dehns
St Bride's House
10 Salisbury Square
London EC4Y 8JD (GB)

(54) **Rotary internal combustion engine with variable volumetric compression ratio**

(57) A method and apparatus for controlling an air input in a rotary engine (410), includes selectively controlling a plurality of inlet ports (440, 442) communicating with an internal combustion cavity (20) of the engine. The ports are located serially downstream of the exhaust port (44) relative direction of a revolution of a rotor (24) of the engine. The inlet ports (440, 442) are controlled to alter air intake at various engine operational stages, such as start up, idle, etc., to allow for varying operational requirements to be met. For example: when a power demand

on the engine lower than a predetermined threshold, control may be effected by opening a primary inlet port (440) and closing a secondary inlet port (442); and, when the power demand exceeds the predetermined threshold, control may be effected by opening the primary inlet port (440) and opening the secondary inlet port (442), the secondary inlet port (442) being located such as to be in communication with the exhaust port (44) throughout portions of the revolution of the engine to purge exhaust gases of the engine.





EUROPEAN SEARCH REPORT

 Application Number
EP 12 17 7791

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X A	US 4 756 284 A (OKIMOTO HARUO [JP] ET AL) 12 July 1988 (1988-07-12) * the whole document * * figures 1,2 * * column 5, line 28 - column 6, line 26 * -----	9,11,12, 14,15 1-8,10, 13	INV. F01C1/22 F01C20/24 F01C20/10 F01C21/18 F01C20/06 F04C29/00 F01C21/10 F01C21/08 F01C21/06 F01C11/00
X	JP S57 186020 A (KITAMURA SHUICHI) 16 November 1982 (1982-11-16) * abstract * * figure 1 * * reference numerals 3, 15, 13, 2 and 17 * -----	9-15	
X A	JP S62 41928 A (MAZDA MOTOR) 23 February 1987 (1987-02-23) * abstract * * figure 1 * * reference numerals 15, 6, 7, 11 and 18 * & JP H06 89675 B2 (MAZDA MOTOR) 9 November 1994 (1994-11-09) * abstract * * figure 1 * * reference numerals 15, 6, 7, 11 and 18 * -----	9-15 1-8	
X A	JP S62 41930 A (MAZDA MOTOR) 23 February 1987 (1987-02-23) * abstract * * figure 1 * * reference numerals 15, 6, 7, 11 and 18 * -----	9-15 1-8	TECHNICAL FIELDS SEARCHED (IPC) F01C F04C F02B F04B
A	US 3 844 256 A (ISHIKAWA Y ET AL) 29 October 1974 (1974-10-29) * the whole document * * figures 4,5 * * column 4, line 46 - column 5, line 2 * -----	1-8	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 19 January 2017	Examiner Sbresny, Heiko
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 12 17 7791

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

19-01-2017

10

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4756284 A	12-07-1988	DE 3701659 A1 US 4756284 A	23-07-1987 12-07-1988
JP S57186020 A	16-11-1982	NONE	
JP S6241928 A	23-02-1987	JP H0689675 B2 JP S6241928 A	09-11-1994 23-02-1987
JP S6241930 A	23-02-1987	NONE	
US 3844256 A	29-10-1974	DE 2251033 A1 FR 2157533 A5 GB 1404328 A US 3844256 A	26-04-1973 01-06-1973 28-08-1975 29-10-1974

25

30

35

40

45

50

55

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82